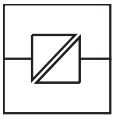
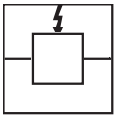
MA-45 AC
MA-45 DC

INSTALLATIONSANVISNING
INSTALLATION MANUAL
INSTALLATIONS ANLEITUNG
MANUEL D'INSTALLATION

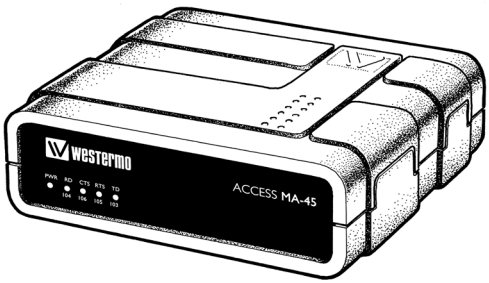
6045-2002


Galvanic Isolation


Transient Protection

Balanced Transmission

CE Approved



Omvandlare, RS-232 – RS-422/485
Converter, RS-232 – RS-422/485
RS-232 – RS-422/485 Wandler
Convertisseur RS-232 – RS-422/485

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Declaration of Conformity

Westermo Teleindustri AB

Declaration of conformity

The manufacturer Westermo Teleindustri AB
SE-640 40 Stora Sundby, Sweden

Herewith declares that the product(s)

Type of product	Model	Art no	
Table top converter RS232-RS422/485	MA-45 AC	3045-0001	

is in conformity with the following EC directive(s).

No	Short name
2004/108/EC	Electromagnetic Compatibility (EMC)
2006/95/EC	Low Voltage (LVD)

References of standards applied for this EC declaration of conformity.

No	Title	Issue
EN 55022	Information technology equipment - Emission	2006 +A1:2007
EN 61000-6-2	Electromagnetic compatibility – Immunity for industrial environments	2005
EN 61000-6-3	Electromagnetic compatibility – Emission for residential environments	2007
EN 60950-1	Information technology equipment – Safety – General requirements	2006 + A1:2006 + A11:2009 + A12:2011

The last two digits of the year in which the CE marking was affixed: 12

Signature

Pierre Öberg
Technical Manager
24th Feb 2012

Postadress/Postal address	Tel.	Telefax	Postgiro	Bankgiro	Org.nr/ Corp. identity number	Registered office
S-640 40 Stora Sundby Sweden	016-428000 Int+46 16428000	016-428001 Int+46 16428001	52 72 79-4	5671-5550	556361-2604	Eskilstuna

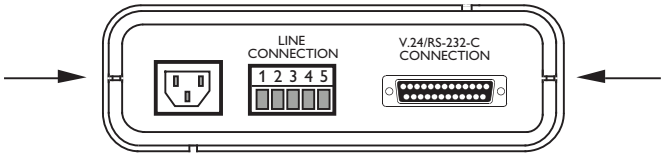
Specifikationer MA-45

Överföring	Asynkront, full/halv duplex eller simplex
Gränssnitt 1	EIA RS-232-C/ITU-T V.24 25-polig D-sub hylsdon, DCE
Gränssnitt 2	EIA RS-422/RS-485/ ITU-T V.11
Överföringshastighet	Upp till 115,2 kbit/s
Lysdioder	Power, RD, CTS, RTS, TD
Isolation	Fullständig galvanisk isolation med optokopplare (data) resp. transformator (matning)
Isolationsspänning	1 500 V
Överspänningsskydd	**Nät:** Genombrottsspänning 440 V vid 230 V AC och 220 V vid 115 V AC **Gränssnitt 2:** Genombrottsspänning sändare och mottagare 7 V Avledningsförmåga 0,6 kW under 1ms
Strömförsörjning	Omkopplingsbart mellan 115/230 V +15/–10% 48–62 Hz
Säkring	AC: 100 mA snabb 5x20 mm DC: 1,6 A snabb 5 x 20 mm
Effektförbrukning	AC: Max 22 mA vid 230 V, max 44 mA vid 115 V DC: Max 1,4 W
Temperaturområde	5–50°C, omgivningstemperatur
Fuktighetsområde	0–95% RH, utan kondensation
Mått	161x139x53 mm BxDxH
Vikt	AC: 0,5 kg DC: 0,25 kg
Montering	Bordsmodell

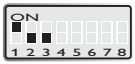
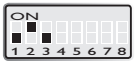
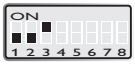
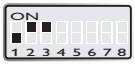
Inställningar

MA-45 kan genom inställningar anpassas till ett flertal olika driftförhållanden.
Samtliga omkopplare i MA-45 är åtkomliga när lådans lock avlägsnas.
Detta sker lätt med hjälp av t.ex en skruvmejsel.

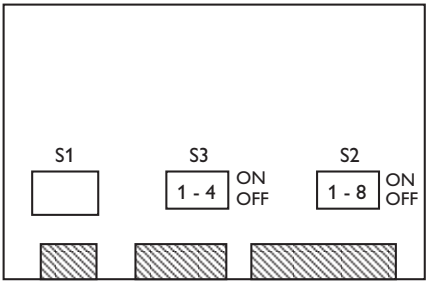
VARNING! ÖPPNA EJ ANSLUTEN ENHET



Val av hastighet

		Hastighet	Vändtid
S2		1 200 bit/s	780 µs
S2		2 400 bit/s	410 µs
S2		4 800 bit/s	220 µs
S2		9 600 bit/s	130 µs
S2		19 200 bit/s	48 µs
S2		38 400 bit/s	34 µs
S2		57 600 bit/s	22 µs
S2		115 200 bit/s	11 µs

Det är inte nödvändigt att ställa in hastighet och val av antal bitar när RTS-styrning används.

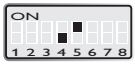


S1 Val av nätspänning 115/230V AC

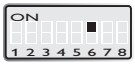
S2 Val av hastighet
Val av 2- eller 4-tråd
Val av antal databitar (se tabell nedan)

S3 Val av terminering och fail-safe
(se nästa sida)

Val av antal bitar

S2		9
S2		10
S2		11
S2		12

2/4-tråds överföring

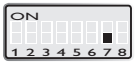
S2 

2-tråd

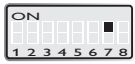
S2

4-tråd

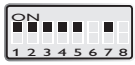
Data eller RTS-styrning

S2 

Datastyrning

S2 

RTS-styrning

S2 

Sändare alltid aktiv

Fabriksinställning

S2

S3

S2: 8 används ej

Terminering med fail-safe

S3

Terminerad (4-tråd)

S3

Terminerad (2-tråd)

S3

Ingen terminering

Fail-safe funktionen gör att mottagaren alltid uppfattar signaltillståndet OFF då inkopplad sändare har tillståndet tri-state (sändare ej aktiverad). Terminering skall kopplas in på mottagaren belägen längst bort från sändaren.

Hjälptabell för inställning av databitar								
7 bitar	●	●	●		●			
8 bitar				●		●	●	●
Ingen paritet	●	●		●		●		
Paritet			●		●		●	●
1 stoppbit	●		●	●			●	
2 stoppbitar		●			●	●		●
Antal bitar	9	10	10	10	11	11	11	12

Anslutningar

Linjeanslutning

(5-polig skruvplint)

Riktning	Anslutning nr.	ITU-T V.11 Benämning
Mottagare	1	A' (R+)
Mottagare	2	B' (R–)
Sändare	3	A (T+)
Sändare	4	B (T–)
	5	Skärm

Definitionen R+/R–, T+/T– kan variera mellan olika tillverkare.

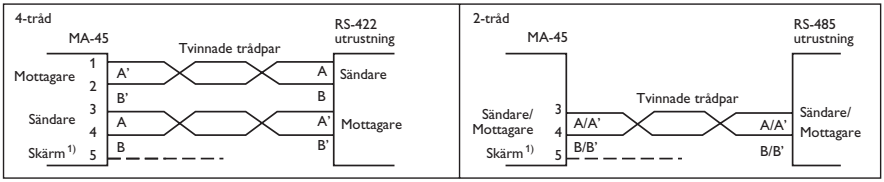
Terminalanslutning (DCE)

(RS-232-C/V.24, 25-Polig D-sub, hylsdon)

Riktning	Anslutning	ITU-T V.24 Benämning	Signalnamn
I	2	103	TD/Transmitted data
O	3	104	RD/Received Data
I	4	105	RTS/Request To Send
O	5	106	CTS/Clear To Send
O	6	107	DSR/Data Set Ready
–	7	102	SG/Signal Ground

I = Ingång i omvandlaren, **O** = Utgång från omvandlaren

Linjekoppling



1) Om skärmad kabel används, anslut skärmen endast i en ände för att undvika jordströmmar.

Överföringsavstånd (gränssnitt 2)

Använd partvinnad kabel. Max ledningslängd 1 200 m (gäller för kabel med area 0,3 mm² och kapacitans 42 pF/m)

Överföringsegenskaperna förbättras med sänkt kapacitans och ökad kabelarea.

I störningsrik miljö bör skärmad kabel användas.

MA-45 DC

Specifikationer

Inspänningsområde 12–36 V DC

Effektförbrukning Max 2 W

Isolationsspänning 1 000 V

Säkring F1 1,6 A snabb 5x20 mm

I övrigt gäller MA-45 AC specifikationerna

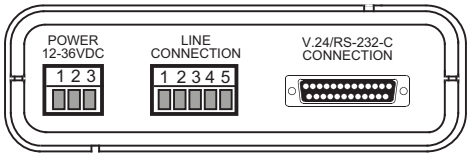
Inställningar

Enligt MA-45 AC

Anslutning

Enligt MA-45 AC, förutom matning

Ansl. nr.	Benämning
1	+ Spänning
2	– Spänning
3	



Tips

MA-45 arbetar med linjegränssnittet RS-422/485. RS-422/485 är gränssnitt konstruerade för multidroppapplikationer. Då man kopplar upp en RS-422 alt. RS-485 förbindelse skall man tänka på att installera ett bussnät, d.v.s det får inte vara förgreningar på kablaget.

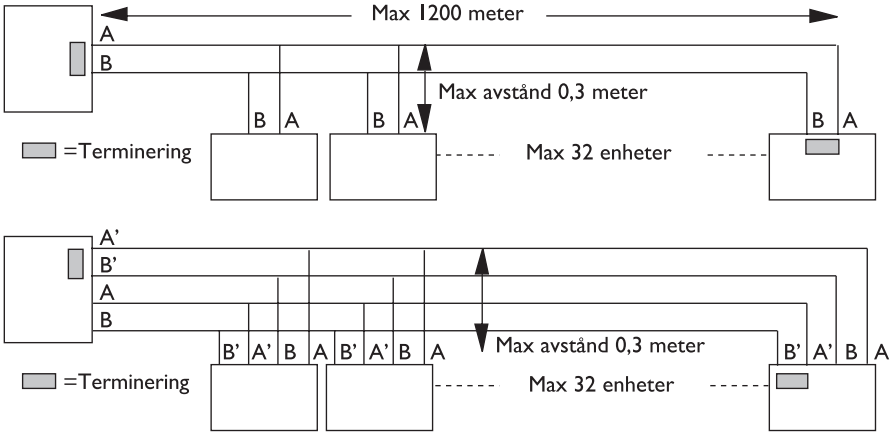
För att få rätt kabelavslutning skall masteromvandlaren samt den sist anslutna enhetens mottagare termineras.

Nedan visas multidroppinstallation med terminering i RS-485 (2-tråds) och RS-422 (4-tråds) kommunikation.

Linjesändaren på MA-45 är endast aktiv då data mottages på RS-232 sidan.

Om det uppkommer något problem vid inkoppling av MA-45 kan lysdiodsindikeringarna vara till värdefull hjälp vid felsökning.

- PWR: Indikerar att enheten är spänningssatt.
- RD: Indikerar mottagen data på linjesidan
- CTS: Indikerar samma som RTS.
- RTS: Indikerar RTS signalen från inkopplad utrustning.
- TD: Indikerar mottagen data på RS-232 sidan.



OBS! R+/R–, T+/T– definitationerna är ej standardiserade, det kan hjälpa att skifta A och B om enheten inte fungerar.

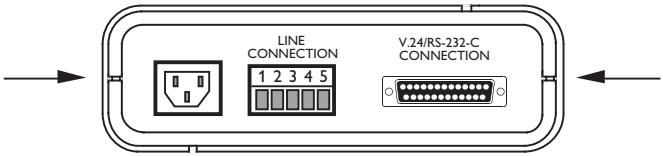
Specifications MA-45

Transmission	Asynchronous, full/half duplex or simplex
Interface 1	EIA RS-232-C/ITU-T V.24 25-position D-sub female, DCE
Interface 2	EIA RS-422/RS-485/ITU-T V.11
Data rate	Up to 115.2 kbit/s
Indicators	Power, RD, CTS, RTS, TD
Insulation	Galvanic insulation with opto-coupler (data transmission) and transformer (supply)
Insulation voltage	1 500 V
Overvoltage protection	**Mains:** Breakdown voltage 440 V at 230 V AC and 220 V at 115 V AC **Interface 2:** Breakdown voltage transmitter and receiver 7 V. Surge capacity 0.6 kW for 1ms
Power supply	Switchable 115/230 V +15/–10% 48–62 Hz
Fuse	AC: 100 mA fast 5x20 mm DC: 1.6 A fast 5 x 20 mm
Power consumption	AC: Max 22 mA at 230 V, max 44 mA at 115 V DC: Max 1.4 W
Temperature range	5–50°C, ambient temperature
Humidity	0–95% RH, non-condensing
Dimensions	161x139x53 mm WxDxH
Weight	AC: 0.5 kg DC: 0.25 kg
Mounting	Table top

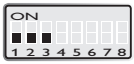
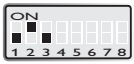
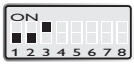
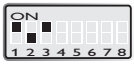
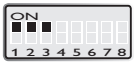
Switch settings

The MA-45 can through different switch settings be adapted to a variety of running conditions. To set the switches, open the plastic case with e.g. a screw-driver.

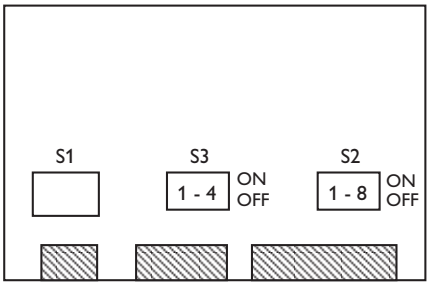
DANGER! DO NOT OPEN CONNECTED UNIT



Selection of data rate

		Data Rate	Turning time
S2		1 200 bit/s	780 µs
S2		2 400 bit/s	410 µs
S2		4 800 bit/s	220 µs
S2		9 600 bit/s	130 µs
S2		19 200 bit/s	48 µs
S2		38 400 bit/s	34 µs
S2		57 600 bit/s	22 µs
S2		115 200 bit/s	11 µs

It is not necessary to set the datarate or the number of bits when RTS-control is used.

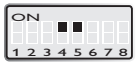
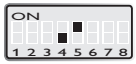


S1 Selection of power supply 115/230 V AC

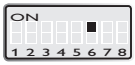
S2 Selection of data rate
Selection of 2- or 4-wire transmission
Selection of no. of data bits
(see table below)

S3 Selection of termination and fail-safe
(see next page)

Selections of bits

S2		9
S2		10
S2		11
S2		12

2/4-wire transmission

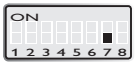
S2 

2-wire

S2

4-wire

Data control by data flow or RTS-control

S2 

Data control

S2

RTS-control

S2

Transmitter always active

Factory settings

S2

S3

S2: 8 not used

Terminering with fail-safe

S3

Terminated (4-wire)

S3

Terminated (2-wire)

S3

No termination

The fail-safe function forces the signal state of the receiver to OFF when the connected transmitter is in tri-state (transmitter inactive). The receiver located furthest away shall be terminated.

Supervision table when selecting data bits								
7 bits	●	●	●		●			
8 bits				●		●	●	●
No parity	●	●		●		●		
Parity			●		●		●	●
1 stop bit	●		●	●			●	
2 stop bits		●			●	●		●
Number of bits	9	10	10	10	11	11	11	12

Connections

Line connection

(5-Position screw-terminal)

Direction	Connection no.	ITU-T V.11 Description
Receiver	1	A' (R+)
Receiver	2	B' (R-)
Transmitter	3	A (T+)
Transmitter	4	B (T-)
	5	Shield

The definations R+/R–, T+/T– can be various between different manufactures.

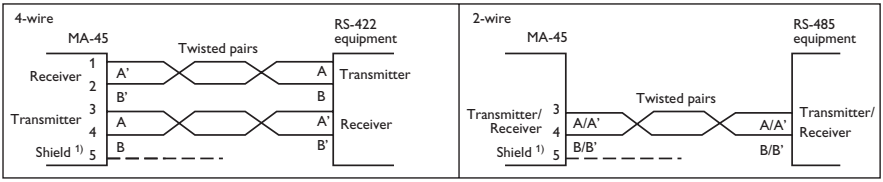
Terminal connection (DCE)

(RS-232-C/V.24, 25-Position D-sub, female)

Direction	Connection	ITU-T V.24 Code	Signal name
I	2	103	TD/Transmitted data
O	3	104	RD/Received Data
I	4	105	RTS/Request To Send
O	5	106	CTS/Clear To Send
O	6	107	DSR/Data Set Ready
–	7	102	SG/Signal Ground

I = Input **O** = Output on MA-45

Line connection



1) If shielded cable is used, connect the shield only at one end to avoid ground currents.

Transmission range (interface 2)

Use twisted pair cable. Max transmission range 1 200 metre.
(cable specifications 0.3 mm² and capacitance 42 pF/m).

The transmission range will increase if a cable with lower capacitance and larger diameter is used.

Use shielded cable in heavy industrial environments.

MA-45 DC

Specifications

Power supply	12–36 V DC
Power consumption	Max 2 W
Insulation	1 000 V
Fuse F1	1.6 A fast 5x20 mm

All other specifications according to MA-45 AC

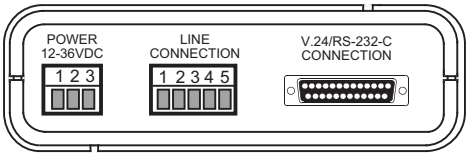
Switch settings

According to MA-45 AC

Connections

According to MA-45 AC, except power supply

Connection no.	Power supply
1	+ Voltage
2	– Voltage
3	



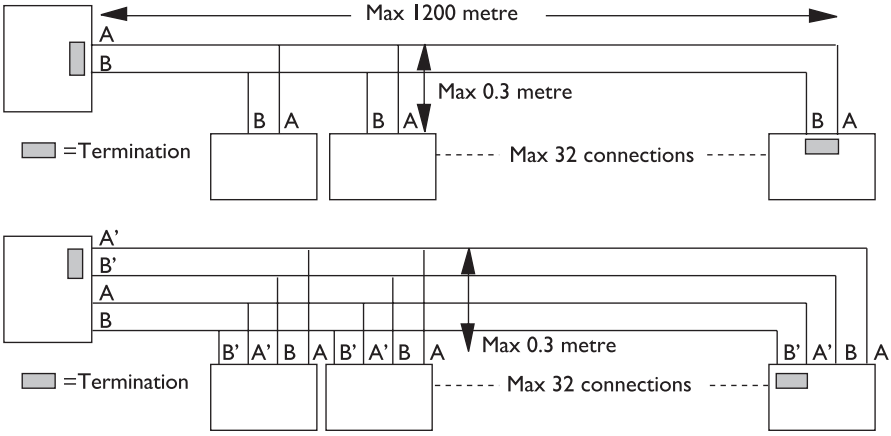
Hints

The MA-45 uses the RS-422/485 interface. RS-422/485 was designed for multidrop applications. When a system is installed it should form a bus structure (see diagrams). Star shaped networks should never be created, there are other Westermo products designed to work in star net applications. To install correctly, an RS-422/485 network should be terminated at the correct points. The recommendation is to terminate the receiver on the master unit and the final bus slave unit. See diagrams for details of how this is done with RS-485 (2 wire) and RS-422 (4 wire).

The line transmitter used in the MA-45 is activated by data received on the RS-232 interface, unlike conventional converters that rely on a control signal (e.g. RTS).

If any problems do occur on set up of the MA-45, the LED's will be helpful.

- PWR: The unit has power.
- RD: Data received on the RS-422/485 interface.
- CTS: Follows RTS
- RTS: Status of RTS from the RS-232 interface
- TD: Data received on RS-232 interface



N.B. R+/R–, T+/T– definitations are not standard, it can help to shift A and B if the unit does not work.

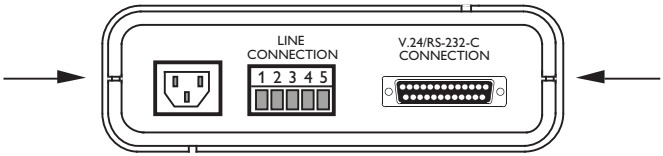
Technische Daten MA-45

Übertragungsarten	Asynchron, Voll-/Halbduplex oder Simplex
Schnittstelle 1	EIA RS-232-C/ITU-T V.24 25 polige Sub-D-Buchse, Schraubklemme
Schnittstelle 2	EIA RS-422/RS-485/ITU-T V.11
Übertragungsraten	Bis zu 38,4 kbit/s
Leuchtdioden	Betrieb, RD, CTS, RTS, TD
Isolation	Galvanisch Isoliert mittels Optokoppler (Datenübertragung) und Transformator (Spannungsversorgung)
Isolationsspannung	1 500 V
Überspannungsschutz	**Netz:** Durchbruchspannung 440 V bei 230 V und 220 V bei 115 V AC **Schnittstelle 2:** Durchbruchspannung Sender und Empfänger 7 V. Stromstoßkapazität 0,6 kW / 1 ms
Spannungsversorgung	115/230 V +15/–10% 48–62 Hz
Sicherung	AC: 100 mA flink 5x20 mm DC: 1,6 A flink 5 x 20 mm
Leistungsaufnahme	AC: Max 22 mA bei 230 V, max 44 mA bei 115 V DC: Max 1,4 W
Umgebungstemperatur	5–50°C
Luftfeuchtigkeit	0–95%, nicht kondensierend
Abmessungen	161x139x53 mm
Gewicht	AC: 0,5 kg DC: 0,25 kg
Installation	Tischgehäuse

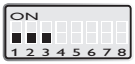
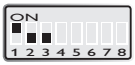
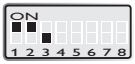
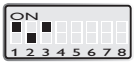
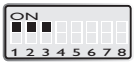
DIP-Schalter Einstellung

Das MA-45 bietet verschiedene Einstellmöglichkeiten zur Abstimmung auf verschiedenste Betriebsverhälnisse. Um die DIP-Schalter einzustellen muß die Gehäuseabdeckung z.B. mit Hilfe eines Schraubendrehers abgenommen werden.

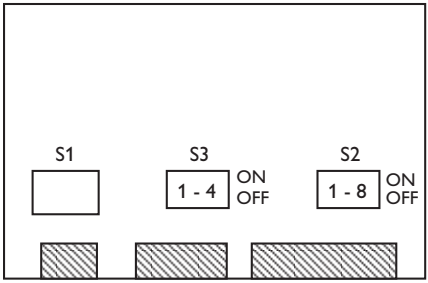
Achtung! Angeschlossene Geräte nicht öffnen



Übertragungsrate

		Über-tragungs-rate	Umschalt-zeit
S2		1 200 bit/s	780 µs
S2		2 400 bit/s	410 µs
S2		4 800 bit/s	220 µs
S2		9 600 bit/s	130 µs
S2		19 200 bit/s	48 µs
S2		38 400 bit/s	34 µs
S2		57 600 bit/s	22 µs
S2		115 200 bit/s	11 µs

Die Datenrate und die Anzahl der Bits muß nicht gesetzt werden, wenn RTS-Steuerung benutzt wird.

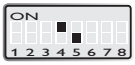
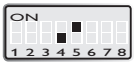


S1 Einstellung der Versorgungsspannung 115/230 V AC

S2 Einstellung der Übertragungsgeschwindigkeit
Einstellung 2- oder 4-Draht Betrieb
Einstellung der Datenlänge
(siehe Tabelle unten)

S3 Einstellung der Termination und fail-safe Funktion 1)

Anzahl der Datenbits

S2		9
S2		10
S2		11
S2		12

2/4 Draht Übertragung

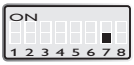
S2

2-Draht

S2

4-Draht

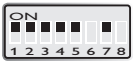
Datensteuerung mittels Datenfluß oder RTS-Steuerung

S2 

Daten Kontrolle

S2

RTS Kontrolle

S2 

Sender immer aktiv

Werkseinstellungen

S2

S3

S2: 8 nicht benutzt

Termination mit fail-safe

S3

4-Draht Termination

S3

2-Draht Termination

S3

keine Termination

Die fail-safe Funktion zwingt den Empfänger in AUS-Zustand zu gehen, wenn der angeschlossene Sender im Tri-State Zustand ist (Sender nicht aktiv).
Am weitest entfernten Empfänger sollte die Termination eingeschaltet werden.

Übersichtstabelle für Datenlänge								
7 Bits	●	●	●		●			
8 Bits				●		●	●	●
Keine Parität	●	●		●		●		
Parität			●		●		●	●
1 Stop Bit	●		●	●			●	
2 Stop Bit		●			●	●		●
Anzahl der Bits	9	10	10	10	11	11	11	12

Leitungsanschluß

(5-polige Schraubklemme)

Richtung	Nr.	ITU-T V.11 Beschreibung
Empfänger	1	A' (R+)
Empfänger	2	B' (R–)
Sender	3	A (T+)
Sender	4	B (T–)
	5	Schirmung

Die Bezeichnungen R+/R–, T+/T– können abhängig vom Hersteller variieren.

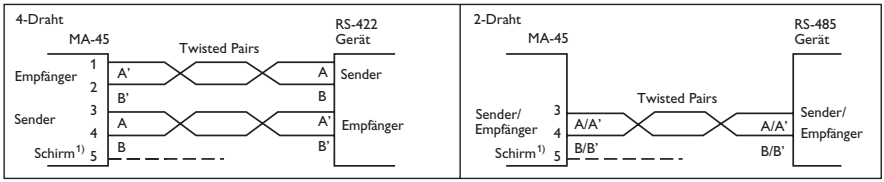
Terminal connection (DCE)

(RS-232-C/V.24, 25-Position D-sub, female)

Richtung	Pin Nr.	ITU-T V.24 Bezeichnung	Beschreibung
I	2	103	TD/Transmitted data
O	3	104	RD/Received Data
I	4	105	RTS/Request To Send
O	5	106	CTS/Clear To Send
O	6	107	DSR/Data Set Ready
–	7	102	SG/Signal Ground

I = Eingang **O** = Ausgang des MA-45

Leitungsanschluß



1) Bei Verwendung von abgeschirmten Kabeln den Schirm nur auf einer Seite anschließen um Erdströme zu vermeiden

Übertragungsweiten:

Benutzen Sie paarverseilte Leitungen. Maximale Übertragungsweite 1 200 m. (bei Kabelspezifikationen von 0,3 mm² und 42 pF/m). Die Übertragungsweite nimmt bei kleinerer Kapazität und größerem Durchmesser zu. Benutzen Sie abgeschirmte Kabel in schlechter Umgebung.

MA-45 DC

Technische Daten

Spannungsversorgung 12–36 V DC
Leistungsaufnahme Max 2 W
Isolationsspannung 1 000 V
Sicherung F1 1,6 A 5x20 mm flink

Alle anderen Merkmale siehe MA-45 AC

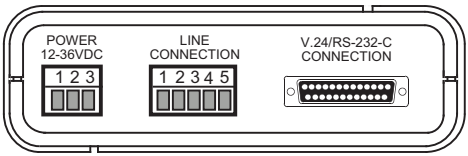
DIP-Schalter Einstellungen

Siehe MA-45 AC

Anschlüsse

Siehe MA-45 AC, außer Spannungsversorgung

Anschluß Nr.	Spannungs-versorgung
1	+ Pol
2	– Pol
3	



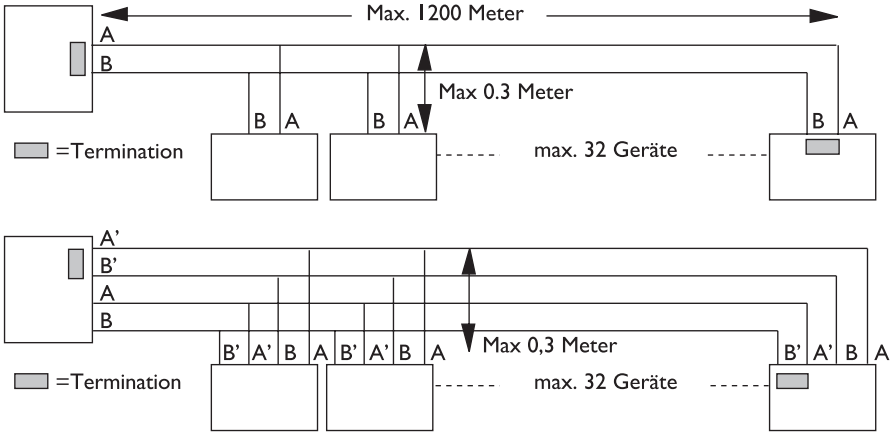
Tips

Das MA-45 besitzt eine RS-422/485 Schnittstelle. Der Schnittstellenstandard RS-422/485 wurde für Mehrpunktverbindungen entwickelt. Dieser Standard ist für Busnetze (siehe Beispiele) geeignet. Sternnetze sollten vermieden werden. Für eine korrekte Installation eines RS-422/485 sollte an den richtigen Punkten die Termination eingeschaltet werden. Es sollte am Empfänger des Masters und letzten Slave die Termination gesetzt sein. Siehe Beispiele für RS-485 (2-Draht) und RS-422 (4-Draht) Termination.

Der Leitungssender des MA-45 wird aktiviert sobald Daten an der RS-232 Schnittstelle empfangen werden, nicht wie normale Konverter die ein Kontrollsignal z.B. RTS benötigen.

Bei Problemen mit der Einstellung des MD-42 können die LED´s hilfreich sein

- PWR Das Gerät hat Versorgungsspannung
- RD Daten Empfang an der RS-422/485 Schnittstelle
- CTS folgt RTS.
- RTS zeigt den Status der RS-232 Schnittstelle an.
- TD Daten Empfang an der RS-232 Schnittstelle



Hinweis: Die Bezeichnungen R+/R-, T+/T– sind nicht Standard, es kann bei Problemen helfen, A und B zu tauschen.

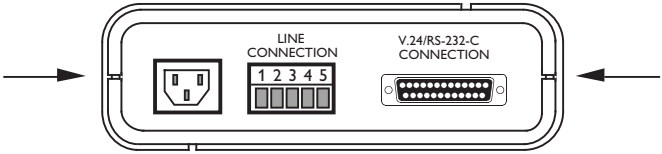
Spécifications MA-45

Transmission	Asynchrone, full/half duplex ou simplex
Interface 1	EIA RS-232-C/ITU-T V.24 Connecteur sub-D 25 points femelle, DCE
Interface 2	EIA RS-422/RS-485/ITU-T V.11 Bornier à vis 5 points
Vitesse	Jusqu'à 115,2 Kbit/sec
Indicateurs LED	Power, RD, CTS, RTS, TD
Isolation	Isolation galvanique avec opto-coupleur (transmission de données) et transformateur (alimentation)
Tension d'isolement	1 500 Volts
Protection surtension	**Secteur :** Tension de claquage 440 V à 230 V AC et 220 V à 115 V AC **Interface 2 :** Tension de claquage émetteur/récepteur 7 V. Surcharge instantanée 0,6 kW pour 1 ms
Alimentation	Configurable 115 V/230 V AC +15/–10% 48–62 Hz
Fusible	AC 100 mA rapide 5x20 mm DC 1,6 A rapide 5x20 mm
Consommation	AC : Max 22 mA à 230 V AC, max 44 mA à 115 V DC : Max 1,4 W
Gamme température	5–50°C température ambiante
Humidité	0–95% RH non condensé
Dimensions	161x139x53 mm (LxHxP)
Poids	AC: 0,5 kg DC: 0,25 kg
Fixation	Modèle autonome

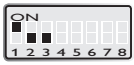
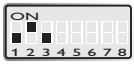
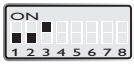
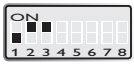
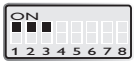
Configuration des micro-interrupteurs

Le MA-45 s'adapté à différentes conditions d'utilisation à l'aide de la configuration des micro-interrupteurs. Pour accéder à ces micro-interrupteurs, ouvrir le coffret à l'aide d'un tournevis placé à l'arrière entre le couvercle et le fond du boîtier. L'ouverture se fait par rotation du tournevis.

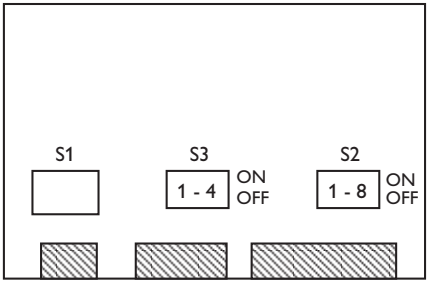
ATTENTION ! Ne pas ouvrir sous tension



Configuration du débit des données

		Débit des données	Temps de Retournement
S2		1 200 bit/s	780 µs
S2		2 400 bit/s	410 µs
S2		4 800 bit/s	220 µs
S2		9 600 bit/s	130 µs
S2		19 200 bit/s	48 µs
S2		38 400 bit/s	34 µs
S2		57 600 bit/s	22 µs
S2		115 200 bit/s	11 µs

Il n'est pas nécessaire de configurer le nombre de bits de données lorsque l'on utilise le contrôle RTS pour le retournement.

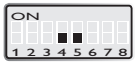


S1 Configuration de la tension secteur 115/230 V AC

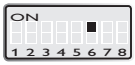
S2 Configuration du débit des données
Configuration du mode de transmission 2 ou 4 fils
Configuration du nombre de bits de données. (voir tableau ci-dessous)

S3 Configuration de la terminaison et du niveau de sécurité (Voir page suivante)

Sélection du nombre de bits

S2		9
S2		10
S2		11
S2		12

Transmission 2/4 Fils

S2 

2 fils

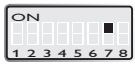
S2

4 fils

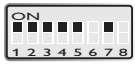
Contrôle retournement

S2

Flux de données

S2 

Contrôle RTS

S2 

Emetteur toujours actif

Configuration Usine

S2

S3

S2 : 8 non utilisé

Terminaison avec niveau de sécurité

S3

Terminé (4 fils)

S3

Terminé (2 fils)

S3

Pas de terminaison

La fonction niveau de sécurité force l'état du signal récepteur sur OFF quand l'émetteur connecté est en mode 3 états. (émetteur inactif).
Le récepteur le plus éloigné doit être équipé de la terminaison.

Table de contrôle pour sélection du nombre de bits								
7 Bits	●	●	●		●			
8 Bits				●		●	●	●
Pas de parité	●	●		●		●		
Parité			●		●		●	●
1 bit de stop	●		●	●			●	
2 bits de stop		●			●	●		●
Nombre de bits	9	10	10	10	11	11	11	12

Connexions

Connexion Ligne

(Bornier à vis 5 points)

Direction	N°	ITU-T V.11 Description
Récepteur	1	A' (R+)
Récepteur	2	B' (R–)
Emetteur	3	A (T+)
Emetteur	4	B (T–)
	5	Blindage

Les définitions R+/R–, T+/T– peuvent changer suivant les constructeurs.

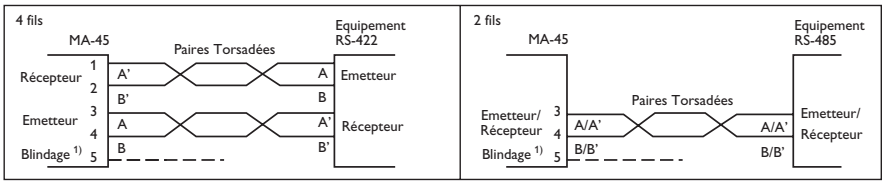
Connexion Terminal (DCE)

(RS-232-C/V.24/V.28, Connecteur sub-D 25 points femelle.)

Direction	point N°	ITU-T V.24	Description
I	2	103	TD/Donnée transmise
O	3	104	RD/Donnée reçue
I	4	105	RTS/Request To Send
O	5	106	CTS/Clear To Send
O	6	107	DSR/Data Set Ready
–	7	102	SG Masse

I= Input (entrée) **O**= Output (sortie) sur le MA-45

Connexion Ligne



1) Si on utilise un câble blindé, connecter le blindage uniquement à une extrémité afin d'éviter les retours de courant de terre.

Distance de transmission (interface 2)

La distance de transmission maximale est de 1 200 m avec un câble en paire torsadée. (Spécifications câble 0.3 mm² et capacité de 42 pF/m).
La distance de transmission augmentera si on utilise un câble ayant une section plus importante et une capacité plus faible.
Utiliser un câble blindé dans des environnements industriels intenses.

MA-45 DC

Caractéristiques

Alimentation	12–36 V DC
Consommation	2 W Max
Isolation	1 000 V
Fusible F1	1,6 A rapide 5x20 mm

Toutes les autres caractéristiques sont identiques à celles du MA-45 AC

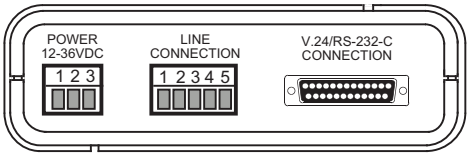
Configuration des micro-interrupteurs

Identique à celles du MA-45 AC

Connexions

Identique à celles MA-45 AC excepté l'alimentation

Connexion N°	Alimentation
1	Tension –
2	Tension +
3	

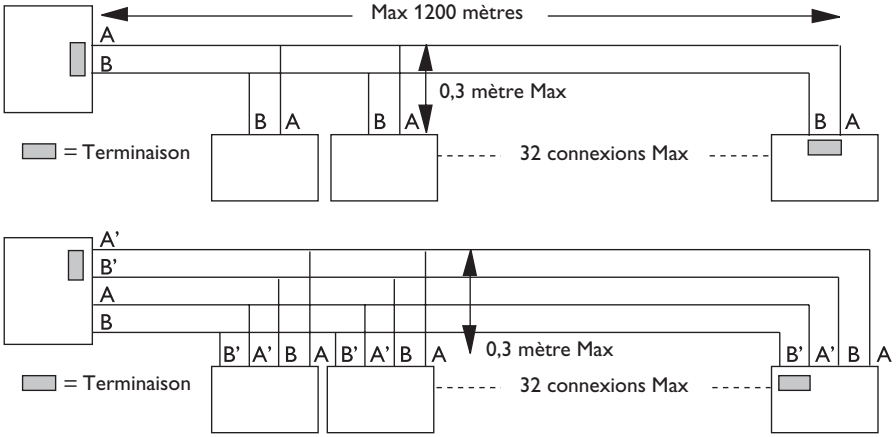


Conseils Pratiques

Le MA-45 utilise une interface RS-422/485. Le standard RS422/485 a été conçu pour des applications multipoints.
Le réseau est installé sous la forme d'une structure bus (voir diagramme).
Les réseaux en forme d'étoile sont proscrits.
Il existe d'autres produits Westermo qui permettent de travailler avec un réseau en étoile.
Une installation correcte d'un réseau RS-422/485 doit toujours être équipée d'une terminaison sur les points correspondants.
Il est indispensable d'équiper de terminaisons le récepteur de l'unité maître ainsi que le dernier esclave qui termine le bus.
Le diagramme ci-contre vous montre comment est réalisée une connexion RS-485 (2fils) et RS-422 (4 fils)

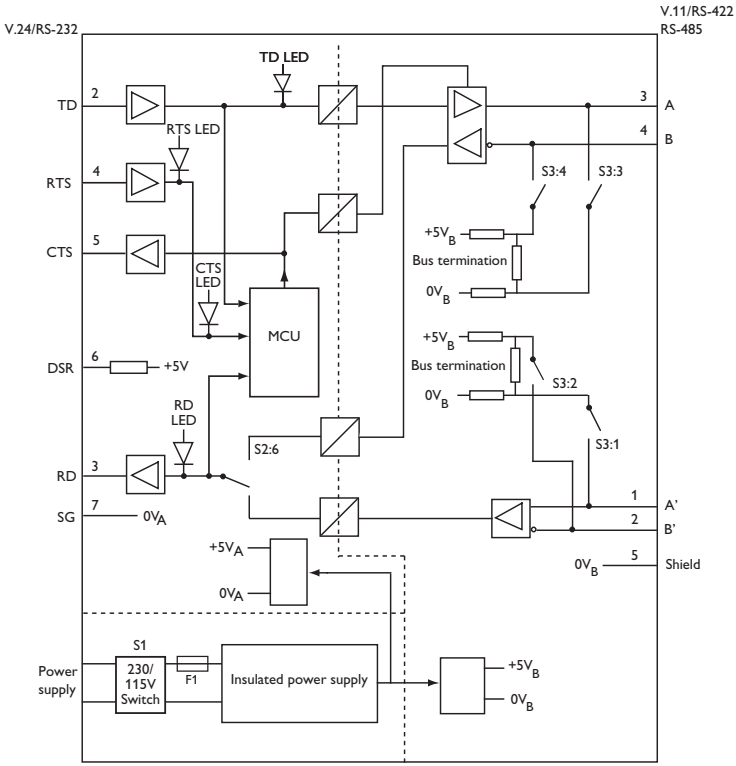
La fonction émission utilisée dans le MA-45 peut être activée soit par détection du flux de données reçu sur le port RS-232, soit par le contrôle RTS en modifiant le micro-interrupteur correspondant (voir page 3 contrôle retournement).
Si un problème survient pendant la configuration du MA-45, les LED de statut peuvent vous aider.

- PWR: L'unité est alimentée.
- RD: Réception de données sur l'interface RS-422/485.
- CTS: Suit le signal RTS.
- RTS: Statut du signal RTS provenant de l'interface RS-232.
- TD: Réception de données sur l'interface RS-232/V.24.



Nota : Les définitions R+/R–,T+/T– ne sont pas standard. On peut résoudre dans certains cas des problèmes de connexion en inversant les fils A et B si les équipements ne fonctionnent pas.

Block diagram



Westermo • SE-640 40 Stora Sundby, Sweden
Tel +46 16 42 80 00 Fax +46 16 42 80 01
E-mail: info@westermo.com
www.westermo.com

Sales Units

Sweden
Westermo Data Communications
Svalgången 1, Vallbyinstitutet, 724 81 Västerås
Tel: +46 (0) 21 548 08 00 • Fax: (0) 21 35 18 50
info.sverige@westermo.se • www.westermo.se

United Kingdom
Westermo Data Communications
Talisman Business Centre
Duncan Road, Park Gate, Southampton. SO31 7GA
Tel: +44 (0) 1489 580 585 • Fax: +44 (0) 1489 580 586
sales@westermo.co.uk • www.westermo.co.uk

Germany
Westermo Data Communications
Goethe Strasse 67
DE-68753 Waghäusel
Tel: +49 (0) 7254 95400-0 • Fax: +49 (0) 7254-95400-9
info@westermo.de • www.westermo.de

Austria
Westermo Data Communications
Tel: +43 (0) 72030 3920 • Fax: +43 (0) 2235 86131
info@westermo.at • www.westermo.at

France
Westermo Data Communications
Bat. A, 9 Chemin de Chilly
FR-91160 Champlan
Tel: +33 1 69 10 21 00 • Fax: +33 1 69 10 21 01
infos@westermo.fr • www.westermo.fr

Singapore
Westermo Data Communications
2 Soon Wing Road #08-05,
Soon Wing Industrial Building
Singapore 347893
Tel: +65 6743 9801 • Fax: +65 6745 0670
sales@westermo.com.sg • www.westermo.com.sg

North America
Westermo Data Communications
939 N. Plum Grove Road, Suite F,
IL 60173 Schaumburg, USA
Tel: +1 847 619 6068 • Fax: +1 847 619 66 74
info@westermo.com • www.westermo.com

Taiwan
Westermo Data Communications
F2, No. 188, Pao-Chiao Rd. Shing-Tien City,
Taipei 23145
Tel: +886 2 8911 1710
sales.cn@westermo.com • www.cn.westermo.com

China
Westermo Data Communications
2F Building B
No.1618 Yishan Road
Shanghai 201103
Tel: +86 21 6145 0400 • Fax: +86 21 6145 0499
sales.cn@westermo.com • www.cn.westermo.com

Westermo Teleindustri AB have distributors in several countries, contact us for further information.

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